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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,044	08/29/2006	Shigehiro Matsuno	960/219	6444

23838 7590 06/08/2009

KENYON & KENYON LLP
1500 K STREET N.W.
SUITE 700
WASHINGTON, DC 20005

EXAMINER	
NGUYEN, TU MINH	
ART UNIT	PAPER NUMBER
3748	

MAIL DATE	DELIVERY MODE
06/08/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,044	MATSUNO ET AL.	
	Examiner	Art Unit	
	TU M. NGUYEN	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 March 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-43* is/are pending in the application.

4a) Of the above claim(s) *10-19,21,22 and 36-43* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,20,23-27 and 33-35* is/are rejected.

7)☒ Claim(s) *5-9 and 28-32* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 August 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. An Applicant's Response to Election/Restriction Requirement filed on March 16, 2009 has been entered. Overall, claims 1-43 are pending in this application.

Election/Restriction

2. Applicant's election of the species of Figure 6 in the Applicant's Response to an Election/Restriction Requirement is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP э 818.03(a)). Claims 1-9, 20, and 23-35 are readable thereon and will be examined in their full merit. Claims 10-19, 21, 22, and 36-43 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-4, 20, 25-27, and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ono et al. (U.S. Patent 6,438,948) in view of Saito et al. (U.S. Patent 6,735,941).

Re claims 1 and 2, as shown in Figure 9, Ono et al. disclose a regeneration controller for regenerating an exhaust purification apparatus (6) that is arranged in an exhaust passage for an internal combustion engine, wherein the exhaust purification apparatus includes an upstream purification portion (upstream end of (6)) and a downstream purification portion (downstream end of (6)), the regeneration controller comprising:

- a difference detector (35, 36, also see claim 14) for detecting at least one of a difference in exhaust pressure, between a first location (35) upstream from the exhaust purification apparatus and a second location (36) downstream from the exhaust purification apparatus, and a difference in exhaust temperature, between a third location (37) upstream from the downstream purification portion of the exhaust purification apparatus and a fourth location (38) downstream from the third location (according to an EGR path (7), location (38) is downstream from location (37));

- a calculation section for calculating an estimated accumulation amount of particulate matter in the exhaust purification apparatus (see claims 1 and 14), wherein the estimated accumulation amount of particulate matter is calculated using at least an air intake amount;

- a heating control section for heating the exhaust purification apparatus to eliminate the particulate matter from the exhaust purification apparatus when the estimated accumulation amount is greater than a reference accumulation amount (see claim 11 - regeneration treatment); and

- a replacement control section for replacing the estimated accumulation amount with a greater estimated accumulation amount when the estimated accumulation amount falls within a replacement determination reference range due to the heating and the at least one difference is greater than a replacement reference value (see claim 11).

Ono et al., however, fail to disclose that the estimated accumulation amount of particulate matter is further calculated using at least an exhaust temperature.

As shown in Figure 1, Saito al. disclose an exhaust gas purification system having a particulate filter (2) with a differential pressure sensor (2) and a temperature sensor (22) to detect, respectively, a pressure drop across the filter and a temperature of the filter from both upstream and downstream locations (see lines 39-42 of column 4). As depicted in Figure 5 and indicated on lines 29-37 of column 6, Saito et al. teach that it is conventional in the art to determine an exhaust gas flow rate through the filter based on an intake air amount and a temperature of the filter; and estimate an accumulation amount of particulate matter in the filter based on the determined exhaust gas flow rate and a pressure drop across the filter. It would have been obvious to one having ordinary skill in the art at the time of the invention was made, to have utilized the teaching by Saito et al. in the controller of Ono et al., since the use thereof would have been routinely practiced by those with ordinary skill in the art to effectively control a regeneration step of the filter.

Re claims 3 and 26, in the modified controller of Ono et al., the replacement determination reference range includes a value equal to the accumulation amount of particulate matter in the exhaust purification apparatus immediately before the heating is completed (claim 11 - immediately after and immediately before are the same point in time).

Re claims 4 and 27, in the modified controller of Ono et al., a maximum value of the replacement determination reference range is equal to the accumulation amount of particulate matter in the exhaust purification apparatus when the heating is completed (see claim 11).

Re claims 20 and 35, Ono et al. disclose an electronic control unit (20') serving as the calculation section, the heating control section, and the replacement control section.

Re claim 25, in the modified controller of Ono et al., as indicated on lines 39-42 of column 4 in Saito et al., the third location is located in the exhaust purification apparatus, and the fourth location is downstream from the exhaust purification apparatus.

5. Claims 23, 24 and 33, 34 are is rejected under 35 U.S.C. 103(a) as being unpatentable over Ono et al. in view of Saito et al. as applied to claims 1 and 2, respectively, above, and further in view of Deeba (U.S. Patent 6,912,847).

Ono et al. disclose the regeneration controller of claims 1 and 2, as described above, but fail to specifically describe that there is a NOx storage reduction catalyst upstream of a combination NOx storage reduction catalyst over a particulate filter base.

As shown in Figure 3, Deeba discloses an exhaust after-treatment system that teaches to place an NOx storage reduction catalyst (14) upstream of a combination particulate filter/NOx storage reduction catalyst ((15); see line 45 of column 9 to line 29 of column 10). It would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the particulate filter assembly (11) of Deeba in the controller of Ono et al. for the advantage of improved NOx emission reduction (see the Abstract of Deeba).

Allowable Subject Matter

6. Claims 5-9 and 28-32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

7. Applicant's arguments with respect to the references applied in the previous Office Action have been fully considered but they are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office Action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Communication

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Tu M. Nguyen/

TMN

Tu M. Nguyen

June 7, 2009

Primary Examiner

Art Unit 3748